

IN THE CLAIMS

Please amend claims 11, 15, 17 and 23 as follows:

Claims 1-10 (Cancelled)

1           11. (Currently Amended)   A method of transmitting a spread  
2 | spectrum signal, the method comprising:  
3 |       multiplying a lower bit rate signal and a first PN-code  
4 | sequence to yield a lower bit rate product; and  
5 |       using a ~~first~~ second PN-code sequence to spread one of a ~~the~~  
6 | lower bit rate product or a higher bit rate signal to a  
7 | predetermined output chip rate for the spread spectrum signal; ~~and~~  
8 |       ~~multiplying a lower bit rate signal and a second PN-code~~  
9 | ~~sequence to yield the lower bit rate product, wherein the lower bit~~  
10 | rate product has a chip rate equal to a bit rate of the higher bit  
11 | rate signal.

1           12.(Previously Presented) A method of recovering a spread  
2 spectrum signal having one of a higher bit rate signal spread by a  
3 first PN-code sequence or a lower bit rate signal spread by the  
4 first PN-code sequence and a second PN-code sequence, a lower bit  
5 rate product of the lower bit rate signal and the second PN-code  
6 sequence having a chip rate equaling a bit rate of the higher bit  
7 rate single, the method comprising:  
8           receiving and demodulation the spread spectrum signal;  
9           successively correlating in a first operation the demodulated  
10 signal with the first PN-code sequence and then in a second  
11 operation with the second PN-code sequence; and  
12           determining if the higher bit rate signal is present in the  
13 spread spectrum signal by checking a presence of a first strong  
14 correlation peak in an output of the first operation and an absence  
15 of a correlation peak in an output of the second operation;  
16           determining if the lower bit rate signal is present in the  
17 spread spectrum signal by checking a presence of at least a weak  
18 correlation peak in the output of the first operation and a  
19 presence of a second strong correlation peak in the output of the  
20 second operation.

1           13. (Previously Presented) The method of claim 12, wherein the  
2 first operation and the second operation are carried in respective  
3 matched filters.

1           14. (Previously Presented) The method of claim 13, wherein a  
2 running average of an output of the each matched filter is obtained  
3 in order to synchronize detection of one or more correlation peaks  
4 in the output of the respective filter.

1           15. (Currently Amended) The method of claim 14, wherein the  
2 running average is determined in accordance with the equation:

3                     
$$\hat{x}_i^n = \alpha * \hat{x}_i^{n-1} + (1 - \alpha) * x_i^n$$

4           where  $x_i^n$  is the absolute value of the  $i$  th matched filter  
5 output sample in an  $n$  th databit period,

6                      $\hat{x}_i^{n-1}$  is the corresponding  $i$  th sample running average at an  
7 end of an  $n-1$  th databit period, and

8                      $\alpha$  is an averaging gain and has a value  $0 \leq \alpha \leq 1$ .

1        16. (Previously Presented) The method of claim 15, wherein the  
2 averaging gain  $\alpha$  has a value  $> 0.5$ .

1        17. (Currently Amended) A spread spectrum communication  
2 system, comprising:

3        a transmitter for transmitting a spread spectrum signal, the  
4 transmitter including

5            a source of a higher bit rate signal having a higher bit  
6 rate,

7            a source of a lower bit rate signal having a lower bit  
8 rate,

9            means for multiplying the higher bit rate signal by a  
10 first PN-code sequence to give the spread spectrum signal a  
11 predetermined output chip rate, and

12           means for multiplying the lower bit rate signal by the  
13 first PN-code sequence and a second PN-code sequence to give the  
14 spread spectrum signal a the predetermined output chip rate,

15 wherein a lower bit rate product of the lower bit rate signal and  
16 the second PN-code sequence has a chip rate equal to the higher bit  
17 rate of the higher bit rate signal; and

18           a receiver including  
19               means for receiving and demodulation the spread spectrum  
20 signal,  
21               first correlation means for correlating the demodulated  
22 signal with the first PN-code sequence,  
23               second correlation means for correlating an output from  
24 the first correlation means with the second PN-code sequence,  
25               means for determining a presence of the higher bit rate  
26 signal in the spread spectrum signal by checking for a first strong  
27 correlation peak in the output of said first correlation means and  
28 an absence of a correlation peak in an output of the second  
29 correlation means, and  
30               means for determining the presence of the lower bit rate  
31 signal in the spread spectrum signal by checking for at least a  
32 weak correlation peak in the output of the first correlation means  
33 and a second strong correlation peak in the output of said second  
34 correlation means.

1        18.(Previously Presented) The spread spectrum communication  
2 system of claim 17, wherein the first operation and the second  
3 operation are carried in respective matched filters.

1        19.(Previously Presented) spread spectrum communication  
2 system of claim 18, wherein the receiver further includes:

3        means for obtaining a running average of an output of each  
4 filter; and

5        means for determining synchronizing peaks in the respective  
6 running averages.

1        20.(Previously Presented) A spread spectrum receiver for  
2 recovering a spread spectrum signal having one of a higher bit rate  
3 signal spread by a first PN-code sequence or a lower bit rate  
4 signal spread by the first PN-code sequence and a second PN-code  
5 sequence, a lower bit rate product of the lower bit rate signal and  
6 the second PN-sequence having a chip rate equaling a bit rate of  
7 the higher bit rate signal, the receiver comprising:

8        means for receiving and demodulation the spread spectrum  
9 signal;

10        first correlation means for correlating the demodulated signal  
11        with the first PN-code sequence;  
12        second correlation means for correlating an output from the  
13        first correlation means with the second PN-code sequence;  
14        means for determining a presence of the higher bit rate signal  
15        in the spread spectrum signal by checking for a first strong  
16        correlation peak in the output of said first correlation means and  
17        an absence of a correlation peak in an output of the second  
18        correlation means, and  
19        means for determining the presence of the lower bit rate  
20        signal in the spread spectrum signal by checking for at least a  
21        weak correlation peak in the output of the first correlation means  
22        and a second strong correlation peak in the output of said second  
23        correlation means.

1        21. (Previously Presented) The receiver of claim 20, wherein  
2        the first operation and the second operation are carried in  
3        respective matched filters.

22.(Previously Presented) The receiver of claim 20, further

includes:

means for obtaining a running average of an output of each  
filter; and

means for determining synchronizing peaks in the respective  
running averages.

23.(Currently Amended) A spread spectrum transmitter for  
transmitting a spread spectrum signal, the transmitter comprising:

a source of a ~~higher~~first bit rate signal having a ~~higher~~  
first bit rate;

a source of a ~~lower~~second bit rate signal having a ~~lower~~  
second bit rate;

means for multiplying the ~~higher~~first bit rate signal by a  
first PN-code sequence to give the spread spectrum signal a  
predetermined output chip rate; and

means for multiplying the ~~lower~~second bit rate signal by the  
first PN-code sequence and by a second PN-code sequence to give the  
spread spectrum signal the predetermined output chip rate, wherein  
a ~~lower~~second bit rate product of the ~~lower~~second bit rate signal



14 | and the second PN-code sequence ~~has~~ have a chip rate equal to the  
15 | ~~higher~~ first bit rate of the ~~higher~~ first bit rate signal.